

CLAIMS

What is claimed is:

1. A composition comprising an aqueous dispersion of an electrically conductive organic polymer and a plurality of nanoparticles.
- 5 2. A composition according to claim 1, wherein said electrically conductive organic polymer is selected from polyaniline with poly(2-acrylamido-2-methyl-1-propanesulfonic acid) as the counterion (PAni/PAAMPSA), polythiophene and poly(ethylenedioxythiophene) with poly(styrenesulfonic acid) as the counter ion (PEDT/PSS).
- 10 3. A composition according to claim 1, wherein said nanoparticles comprise nanoparticles selected from inorganic nanoparticles, organic nanoparticles and mixtures thereof.
- 15 4. A composition according to claim 3, wherein said inorganic nanoparticles are selected from silica, alumina, and electrically conductive metal oxides and mixtures thereof.
5. A composition according to claim 3, wherein said organic nanoparticles are selected from polyacrylates, carbon nanotubes, and perfluoroethylene sulfonates and mixtures thereof.
- 20 6. A composition according to claim 1, wherein said nanoparticles have a particle size less than about 500 nm.
7. A composition according to claim 1, wherein said nanoparticles have a particle size less than about 250 nm.
- 25 8. A composition according to claim 1, wherein said nanoparticles have a particle size less than about 50 nm.
9. A composition according to claim 4, wherein the weight ratio of silica:electrically conductive polymer is about 4:1.
- 30 10. A composition according to claim 4, wherein the weight ratio of electrically conductive oxides:electrically conductive polymer is about 1.5:1.
11. A high resistance buffer layer comprising an electrically conductive polymer and a plurality of nanoparticles dispersed therein.
- 35 12. A high resistance buffer layer according to claim 11, wherein said electrically conductive polymer is selected from PAni/PAAMPSA and PEDT/PSS.
13. A high resistance buffer layer according to claim 11, wherein said nanoparticles comprise nanoparticles selected from inorganic nanoparticles and organic nanoparticles and mixtures thereof.

14. A high resistance buffer layer according to claim 11, wherein said inorganic nanoparticles are selected from silica, alumina, or electrically conductive metal oxides and mixtures.

15. A high resistance buffer layer according to claim 11, wherein  
5 said organic nanoparticles are selected from polyacrylates, carbon nanotubes, and perfluoroethylene sulfonates and mixtures thereof.

16. A high resistance buffer layer according to claim 11,  
wherein said layer has a conductivity of less than about  $1 \times 10^{-3}$  S/cm.

17. A high resistance buffer layer according to claim 11, wherein  
10 said layer has a conductivity of less than about  $1 \times 10^{-5}$  S/cm.

18. An organic device comprising a high resistance buffer layer comprising an electrically conductive polymer and a plurality of nanoparticles dispersed therein.

19. A device according to claim 18, wherein said electrically  
15 conductive polymer is selected from PAni/PAAMPSA or PEDT/PSS.

20. A device according to claim 18, wherein said nanoparticles comprise nanoparticles selected from inorganic nanoparticles and organic nanoparticles and mixtures thereof.

21. A device according to claim 18, wherein said inorganic  
20 nanoparticles are selected from silica, alumina, or electrically conductive metal oxides and mixtures thereof.

22. A device according to claim 18, wherein said organic  
nanoparticles are selected from polyacrylates, carbon nanotubes, and perfluoroethylene sulfonates and mixtures thereof.

25